
**Information technology — Learning,
education, and training — Metadata
for facilitators of online learning —
Part 1:
Framework**

*Technologies de l'information pour l'apprentissage, l'éducation et la
formation — Métadonnées pour les formateurs d'apprentissage en
ligne —*

Partie 1: Cadre





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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives) or www.iec.ch/members_experts/refdocs).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents) or the IEC list of patent declarations received (see patents.iec.ch).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html. In the IEC, see www.iec.ch/understanding-standards.

This document was prepared by Joint Technical Committee ISO/IEC JTC1, *Information technology*, Subcommittee SC 36, *Information technology for learning, education and training*.

A list of all parts in the ISO 23127 series can be found on the ISO website and IEC websites.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

Introduction

With the rapid development of internet and mobile technologies, online learning facilitation is becoming more and more popular. There are tens of thousands of online facilitation service providers in the market already, such as companies, agencies, or independent facilitators. These online facilitators may work with face-to-face or online LET organizations, they may or may not have certificates on facilitation, teaching, or coaching.

An online learning facilitator (OLF) is someone who provides facilitation, tutoring, and training services on different kinds of online platforms or systems. From present practice, services offered by an OLF include lecturing, coaching tutoring, assessing/evaluating, learning resources design, etc. (see Annex A.1).

In the process of online and hybrid learning, it is very common to describe who the OLFs are. It is important to know the contact information, facilitation preference and ability, facilitation service history, etc. OLF information may be found in or associated with different systems, from online learning systems, training websites, teacher rating systems to HR information systems in schools and universities, etc. (see Annex A.2). But different systems only store and use part of this information according to their business needs and functions.

This document describes how to describe OLF in various IT systems, and also how to exchange this information across different platforms. It creates a metadata structure of OLF information to ensure that education IT systems can store and access this information as needed.

By defining a generic conceptual model, this document specifies a high-level semantic interoperability between bindings of OLF information attributes. In this way, the conversion between different bindings becomes simple and straightforward.

This document can be used in different scenarios:

- 1) developing an OLF information model for education IT system;
- 2) maintaining and exchanging OLF data across different IT systems;
- 3) collecting/harvesting OLF information from different IT systems when needed; and
- 4) matching OLF to learners in learning management systems according to the services they offer and their expertise.

The ISO/IEC 23127 series has a multipart structure and is integrated via different parts to define and describe various aspects of online facilitators' information. Each part of the ISO/IEC 23127 series is self-contained and has its own scope and purpose. This facilitates use and maintenance of specific parts and thus of the whole standard.

The ISO/IEC 23127 series aims to enable multilingual equivalence and cultural adaptability. This means incorporating and supporting both (1) a top-down requirements approach, i.e., that of jurisdictional domains; and, (2) a bottom-up approach of the requirements of the individual, i.e., human being, as the (final) user, doing so in a global context. To achieve this, the ISO/IEC 23127 series supports both global interoperability and local specificity, such as:

- natural and special languages and associated multilingual requirements;
- jurisdictional, legal, regulatory, and geopolitical constraints as mandated by relevant jurisdictional domain(s).

This document does not provide detailed information regarding multilingual equivalencies or multicultural requirement support.

In the implementation of one (or more) part(s) of the ISO/IEC 23127 series, it is possible that a user may have additional or more precise requirements to implement. This document only defines high-

level parts of OLF information in online platforms. Users should extend customized information by implementing one or more parts (or combinations).

This document only specifies metadata for OLF and the data structures. Data privacy constraints should therefore be described in implementers' optional application profiles (see [Clause 9](#)). This document does not provide detailed information on data privacy protection techniques. OLF's information regarding privacy can be handled and protected with any methods and techniques as needed by implementers.

Information technology — Learning, education, and training — Metadata for facilitators of online learning —

Part 1: Framework

1 Scope

This document specifies a metadata structure to store, present and exchange online learning facilitator (OLF) information by specifying the data elements and their attributes to describe facilitator's information on various kinds of online education platforms.

This document provides a generic information model of OLF to describe relevant information that applies to the facilitation and training services provided online, and includes information about the person offering facilitation, the affiliation of the person, facilitation ability, facilitation practices, the facilitation service offered, learners' reviews and testimonies, and related social network information. The conceptual data model allows the linguistic diversity of OLF information attributes and offers a flexible metadata schema to describe them.

NOTE 1 Although this document provides suggestions on how to designate metadata elements that require privacy protection, it does not provide detailed methods or techniques for how to implement privacy protection measures.

NOTE 2 For metadata with privacy, the application profile in ISO/IEC 19788-1 can be used to tag data elements concerning privacy and define them with conditions. OLF information privacy protection methods and techniques, such as privacy-by-design, can be selected and applied as needed by implementers.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 2382-36, *Information technology — Vocabulary — Part 36: Learning, education and training*

ISO/IEC 19788-1:2011/Amd 1:2014, *Information technology — Learning, education and training — Metadata for learning resources — Part 1: Framework*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 2382-36, ISO/IEC 19788-1, and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1 online learning facilitator

OLF

body, entity or person who provides facilitation or tutoring services online

Note 1 to entry: An online learning facilitator may or may not be a person; it may be a computer agent.

Note 2 to entry: An online learning facilitator may or may not be a teacher in a traditional school or an instructor in a university.

Note 3 to entry: An online learning facilitator may or may not possess an official certificate on teaching, coaching or facilitation.

3.2 OLF information online learning facilitator information

recorded information associated with individual *online learning facilitator* (3.1) in an IT system used to support learning, education or training

Note 1 to entry: This information may be created, stored, retrieved, used, etc. by learning technology systems, individuals (facilitators, learners, etc.), and other entities.

4 Abbreviated terms

DEGS	data element group specification
DES	data element specification
HR	human resource
MLR	metadata for learning resources

5 Specification of data elements

5.1 General

In this clause, data elements of OLF metadata shall be as specified in the MLR format according to ISO/IEC 19788-1:2011/Amd 1:2014, Clause 6.

5.2 Data element specification attributes

A data element specification consists of an identifier (for the data element specification) and a (defined) list of data element attributes with rules for the values of those attributes.

Each data element specification shall have the following attributes:

- identifier (data element specification identifier);
- property name (data element name);
- definition (data element definition);
- linguistic indicator (data element linguistic indicator);
- domain (data element domain);
- codomain (data element codomain);
- content value rules;

- refines;
- example(s);
- note(s).

The rules of all data element specification attributes shall be in accordance with ISO/IEC 19788-1:2011/ Amd 1:2014, Clause 6.

5.3 Data element specification: Matrix template

A data element specification consists of a completed data element specification template, see [Table 1](#).

Table 1 — Data element specification template

Data element specification	
<i>Essential data element attributes</i>	
Identifier (mandatory)	
Property name (mandatory)	
Definition (mandatory)	
Linguistic indicator (mandatory)	
Domain (mandatory)	
Codomain (mandatory)	
Content value rules (conditional)	
<i>Non-essential data element attributes</i>	
Refines (conditional)	
Example(s) (optional)	
Note(s) (optional)	

5.4 Data element specification: Example

[Table 2](#) is an example of how to use the template above to describe a data element.

Table 2 — An example of Data element specification

Data element specification	
<i>Essential data element attributes</i>	
Identifier (mandatory)	ISO_IEC_23127-2:20XX::DES 0XXXX
Property name (mandatory)	Citizenship
Definition (mandatory)	Name of the particular country an OLF belongs to
Linguistic indicator (mandatory)	linguistic
Domain (mandatory)	Personal Information (ISO_IEC_23127-1:2020::IC0001)
Codomain (mandatory)	literal
Content value rules (conditional)	-
<i>Non-essential data element attributes</i>	
Refines (conditional)	-
Example(s) (optional)	China
Note(s) (optional)	-

6 OLF data elements

OLF information shall be described in MLR data elements format in accordance with ISO/IEC 19788-1:2011/Amd 1:2014, Clause 7.

A **data element** is a 3 or 4 parts entity, either

<dataElementSpecificationID, subject, contentValue>

or

<dataElementSpecificationID, subject, contentValue, languageCode>

where

- 1) *dataElementSpecificationID* is the **identifier** of a **data element specification** (said to be the specification of the data element);
- 2) *subject* is the **information** being described (denoted by an **identifier**) that belongs to the **domain** of the data element (as given in the data element specification);
- 3) *contentValue* is the actual information recorded as the content of the data element (its **content value**) that belongs to the **codomain** of the data element (as given in the data element specification);
- 4) *languageCode* is a code, from BCP 47¹⁾, for the name of the language used (in the *contentValue* part) if that content is linguistically significant (that is the **linguistic indicator** value from this data element specification is “linguistic”).

7 Specification of OLF classes

7.1 Definition of a resource class

A resource class is a subset of OLF information that can be identified with explicit boundaries and meaning and whose properties and behaviour follow the same rules. In this document, the metadata for OLF consists of a hierarchy of resource classes.

7.2 Attributes of a resource class

The class specification attributes shall be as specified in the MLR format according to ISO/IEC 19788-1:2011, Clause 8/Amd 1:2014.

7.3 Resource class specification: Matrix template

This document uses a matrix template defined in MLR according to ISO/IEC 19788-1:2011, Clause 8/Amd 1:2014.

8 Generic OLF classes

8.1 General

This clause describes high-level resource classes (Figure 1) that may be reused in other OLF parts in this series or user defined application profiles. Among them, OLF information is the super-class, and other classes are considered as sub-classes of it.

In general, OLF data consists of the following categories of information: personal information, occupational history information, facilitation offer information, performance history information, academic ability, and OLF network information.

These categories constitute an OLF information model, but may include more extended information in the future with the development and maturity of online education service. This document only includes the partial information of OLF which is important to support online facilitation.

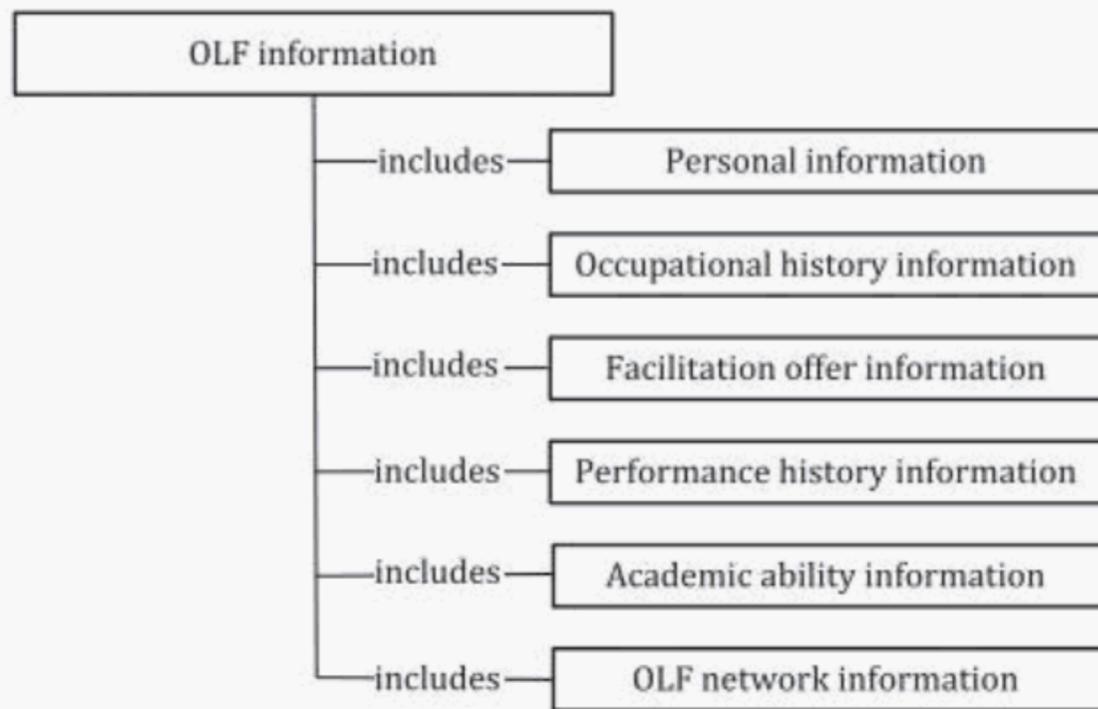


Figure 1 — Information model for OLF metadata

In this clause, the generic OLF classes shall be as specified in the MLR format according to ISO/IEC 19788-1:2011/Amd 1:2014, Clause 8.

8.2 IC0000 OLF information

Table 3 is the resource class definition of OLF information in this standard series.

Table 3 — Definition of OLF information

Identifier	ISO_IEC_23127-1:2020::IC0000
Name	<i>OLF information</i>
Definition	This class has the property that all of its essential characteristics can be conveyed in a set of data which contains information of OLF in online platforms to fulfil their facilitation, coaching or training service.
SubclassOf	ISO_IEC_19788-1:2011::RC0001 (Resource)
Note	At the time of publication, there are six OLF resource classes from IC0100 to IC0600.

8.3 IC0100 personal information

Table 4 is the resource class definition of Personal information in this standard series.

Table 4 — Definition of Personal information

Identifier	ISO_IEC_23127-1:2020::IC0100
Name	<i>Personal information</i>
Definition	Basic information about a natural person as an online facilitator, such as name, citizenship, occupation, etc.
SubclassOf	ISO_IEC_23127-1:2020::IC0000 (OLF information)
Note	Mandatory

8.4 IC0200 occupational history information

[Table 5](#) is the resource class definition of Occupational history information in this standard series.

Table 5 — Definition of Occupational history information

Identifier	ISO_IEC_23127-1:2020::IC0200
Name	<i>Occupational history information</i>
Definition	Information of online facilitator's occupational history, usually recorded in personnel information system, such as which school or university he or she is employed at, job titles, academic roles, and contact information.
SubclassOf	ISO_IEC_23127-1:2020::IC0000 (OLF information)
Note	Optional

8.5 IC0300 facilitation offer information

[Table 6](#) is the resource class definition of Facilitation offer information in this standard series.

Table 6 — Definition of Facilitation offer information

Identifier	ISO_IEC_23127-1:2020::IC0300
Name	<i>Facilitation offer information</i>
Definition	Facilitation offer information relates to fields of expertise and service preference of the OLF. It may include subject field, learner type and facilitation methods, service location and form, and so on.
SubclassOf	ISO_IEC_23127-1:2020::IC0000 (OLF information)
Note	Mandatory

8.6 IC0400 performance history information

[Table 7](#) is the resource class definition of Performance history information in this standard series.

Table 7 — Definition of Performance history information

Identifier	ISO_IEC_23127-1:2020::IC0400
Name	<i>Performance history information</i>
Definition	Performance information on achievements and successful cases of facilitation. It may be divided into two parts: 1) facilitation records: to whom, when and where he or she provides facilitation service, and the results of facilitation activities, usually scores and certificates of learners; 2) awards and testimonies achieved by facilitation.
SubclassOf	ISO_IEC_23127-1:2020::IC0000 (OLF information)
Note	Optional

8.7 IC0500 academic ability

[Table 8](#) is the resource class definition of Academic ability in this standard series.

Table 8 — Definition of Academic ability

Identifier	ISO_IEC_23127-1:2020::IC0500
Name	<i>Academic ability</i>
Definition	The OLF's academic abilities and achievements. It may include research fields, research specialties and expertise, research outcomes (academic papers, books, academic awards, etc.) and evaluations and comments by peer.
SubclassOf	ISO_IEC_23127-1:2020::IC0000 (OLF information)
Note	Optional

8.8 IC0600 OLF network information

[Table 9](#) is the resource class definition of OLF network information in this standard series.

Table 9 — Definition of OLF network information

Identifier	ISO_IEC_23127-1:2020::IC0600
Name	<i>OLF network information</i>
Definition	Connections to other online facilitation practitioners, learners taught by this facilitator, domain experts, colleagues and collaborators, etc., through facilitation or academic activities.
SubclassOf	ISO_IEC_23127-1:2020::IC0000 (OLF information)
Note	Optional

9 Predefined rule sets

Predefined rule sets in this document shall be as specified in the MLR format according to ISO/IEC 19788-1:2011, Clause 9.

10 Specification of application profiles

10.1 General

An application profile is a defined structured collection of data element specifications chosen to satisfy the particular needs of a community, or communities. User extensions can be made in this way.

10.2 Application profile attributes

The application profile attributes shall be as specified in the MLR format according to ISO/IEC 19788-1:2011/Amd 1:2014, Clause 12.

10.3 DEGS' matrix

In this standard series, the application profile attributes shall be described in a DEGS matrix, which shall be as specified in the MLR format according to ISO/IEC 19788-1:2011, Clause 11.

The privacy indicator/privacy semantic information could be expressed as a statement using the "conditional" value.

10.4 Application profile: Example

The matrix shown in [Table 10](#) provides an example of DEGS' matrix, which is one part of an application profile developed for some country, where "home address" and "license number" are data elements needing or requiring protection.

Table 10 — An example of DEGS' matrix

Data element group specification						
Identifier(mandatory)		ISO_IEC_23127-1:2020::DEGS0001				
Name(ISO English) (mandatory)		OLF personal information				
Description (mandatory)		Matrix for the properties of the class personal information				
Position	DES_Identifier/ DEGS_Identifier	Name (ISO English)	Presence type indicator	Repeatability indicator	Order indicator	Order semantic
(01)	(02)	(03)	(04)	(05)	(06)	(07)
1	ISO_IEC_23127-2: 2020::DES0XXX	id	mandatory	non-repeatable	unordered	-
2	ISO_IEC_23127-2:2020:: DES0XXX	home_address	conditional C0001	non-repeatable	unordered	-
3	ISO_IEC_23127-2:2020:: DES0XXX	license_number	conditional C0002	non-repeatable	unordered	-

Conditions table

Code	Conditions
C0001	This DES is subject to privacy protection requirements, and no data collection is allowed.
C0002	This DES is subject to privacy protection requirements, and the collected data cannot be shared with third parties.

NOTE Condition value for privacy indicator could be any statement deemed useful, such as:

- This DES is subject to privacy protection requirements, and no data collection is allowed.
- This DES is subject to privacy protection requirements, and the collected data cannot be shared with third parties.
- This DES is subject to privacy protection requirements, and access to data restricted to a specific range of users with a detailed list.

Annex A (informative)

OLF information for online facilitation and training

A.1 Examples of online services by OLFs

Types of services offered by OLF with regard to online learning facilitation include, but are not limited to, the following.

- **Lecturing.** Facilitators give video/audio lectures online, and learners watch lectures. The lectures are pre-recorded or broadcasted in real-time. In this context, facilitators seldom offer one-to-one instruction to a specific learner. Usually, lecturing is in one-to-many mode.
- **Coaching.** Coaching is a form of development in which a coach/facilitator supports a learner in achieving a specific personal or professional goal by providing training, advice and guidance. Online coaching happens online with the coach/facilitator and learner separated in different locations, even across different time zones^[2]. Coaching services may focus on a variety of topics, such as improving students' skills and critical thinking.
- **Tutoring/mentoring.** Online tutoring is a kind of activity of offering instruction service on the internet or in a networked environment, in which facilitators and learners may be separated by time and space. Online tutoring, as a reflection of the diversity of the wider internet, is practiced using many different approaches and is addressed to distinct sets of users. The educational purpose of tutoring services may focus on different topics, such as knowledge and skill development^[3].
- **Assessing/evaluating.** Assessment is the process of documenting, usually in measurable terms, the knowledge, skill, attitudes and beliefs of learners^[4]. It involves methods and tools to support collecting and analyzing information from tests or other sources on the achievement or abilities of individuals. In an online facilitation service, facilitators diagnose learners' development remotely through assessment, offer individual and specific advice to them.
- **Design customized learning resources.** Since each learner is unique, facilitators can design customized learning resources for a specific learner to maximize his/her effort to achieve a specific learning outcome.
- **Design customized learning plans.** Since each learner is unique, facilitators can offer customized learning plans suitable to a specific learner to maximize his/her effort to achieve a specific learning outcome. Learning plans may include learning outcomes, learning materials, schedules, assessments, etc.

NOTE In some pedagogical scenarios, these facilitation models could be mixed, e.g. in a flipped-classroom model.

A.2 Stakeholders and information stored in different systems or websites

OLF information may be found in different systems, from an online facilitation and learning system, facilitator training website or facilitator rating system to the Learning Management System in schools or universities. But different IT systems only store and use part of a facilitators' information according to their business needs and functions. Stakeholders who may be interested in specific OLF are learners (with their parents if under legal age), potential learners, HR managers, peer OLFs, potential employers and others. Each of them uses different parts of the OLF information.

Figure A.1 outlines potential types of websites, web services and systems that may require access to OLF information as follows.

- **Online learning and training system.** Online learning and training systems include Learning Management System, Massive Open Online Course platform and other websites. In these websites, we can find OLF information as the profile of a facilitator, facilitation records, assessment records and so on.
- **Facilitator rating website.** In this kind of website, the learner or parents can rate the facilitators. OLF information may include basic information such as name, institution, contacts, rating score and testimonies from learners. This information builds up a reputation for an OLF and can help potential learners choose the appropriate course and facilitator.
- **HR information system.** Facilitators’ personnel information and skills are usually part of their professional information recorded in an HR information system. This information is crucial for administration and management.
- **Facilitator training website.** A website for facilitators or anyone who performs facilitation online to develop their professional knowledge. Facilitators’ performance and achievements on training can be recorded for future evaluation.
- **Social networking website for job recruitment.** These are websites to help potential employers to find the appropriate person to hire. And it is also very useful for facilitators to promote themselves for desired facilitation jobs.

There are other websites or online platforms regarding OLF information that may not be listed above.

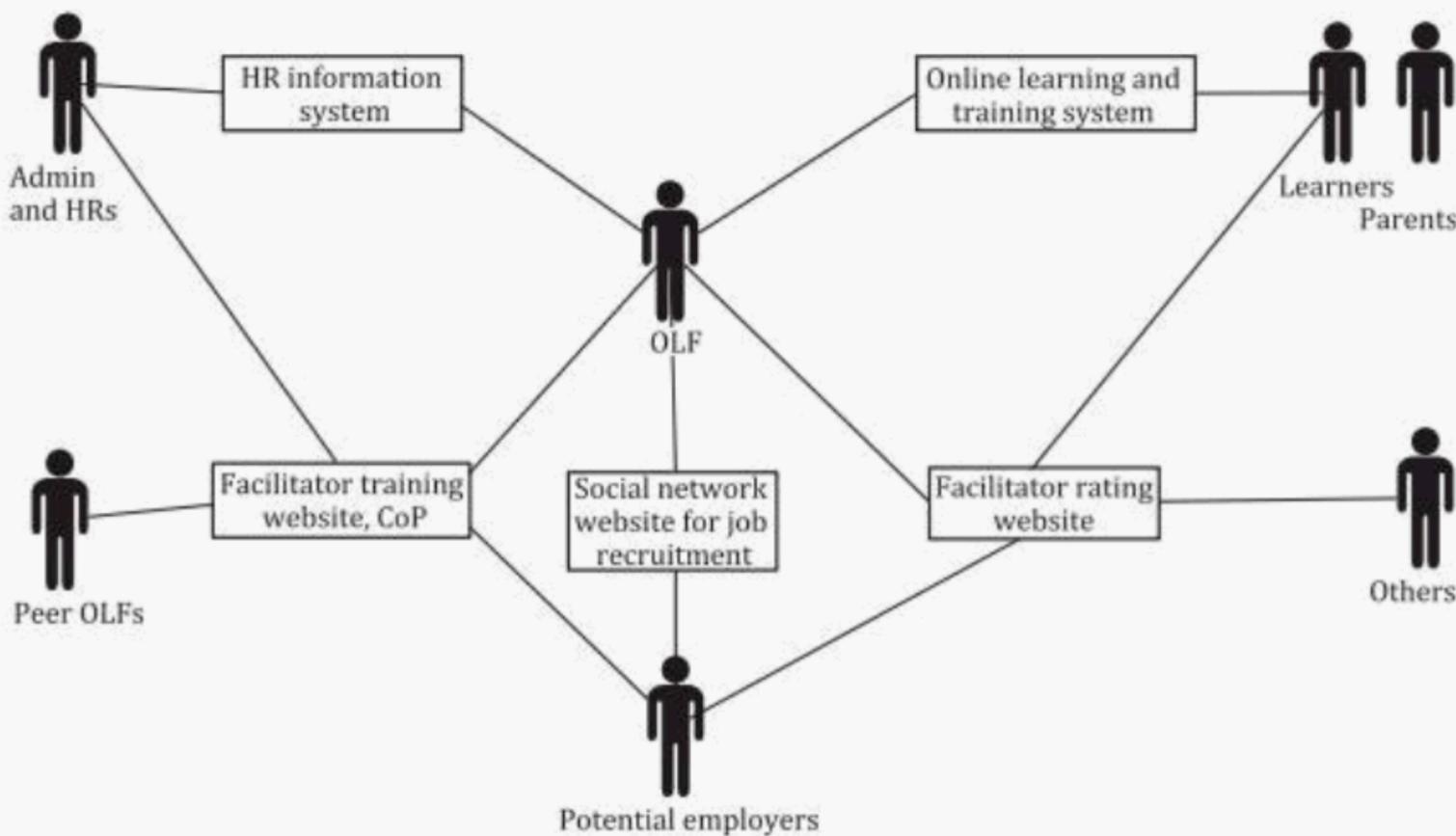


Figure A.1 — Example of systems with associations or links to OLF information

Bibliography

- [1] IETF BCP 47¹, *Tags for identifying languages*, September 2009
- [2] Passmore J., ed. *Excellence in coaching: the industry guide*. Kogan Page, London, Philadelphia, Third Edition, 2016
- [3] Salmon G., *E-moderating: The key to teaching and learning online*. Routledge Falmer, London, Second Edition, 2004
- [4] Hjermstad M., Fainsinger R., Kaasa S., European palliative care research collaborative (EPCRC). Assessment and classification of cancer pain. *Curr. Opin. Support. Palliat. Care*. 2009, **3** (1) pp. 24–30

1) Available at <https://tools.ietf.org/html/bcp47>

